The logo for NASA's Airspace Technology Demonstrations (ATD) is on the left. It consists of the letters "ATD" in a large, bold, grey sans-serif font. A small, dark grey silhouette of a jet aircraft is positioned above the letter "A".

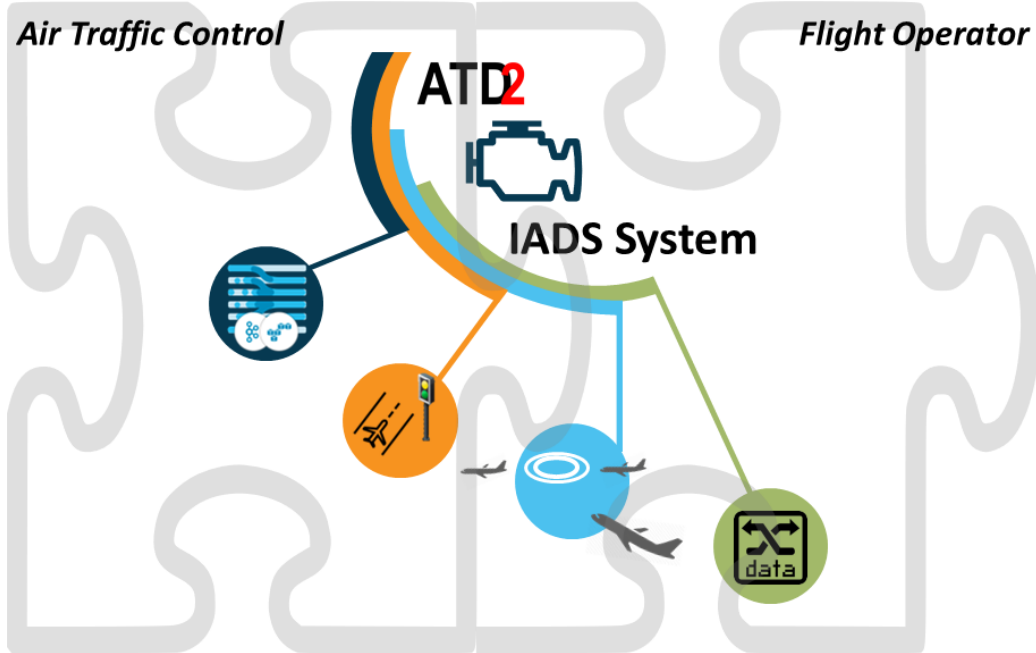
# **AIRSPACE TECHNOLOGY** DEMONSTRATIONS

**Shawn Engelland, NASA ATD Project Manager**

**Aviation and Climate Change Forum**

**Technology Advances – Surface Operations**

**January 20, 2022**



## Integrated Arrival/Departure/Surface (IADS)

NASA's ATD-2 Single-Airport IADS demo was a *pathfinder* for the FAA's Terminal Flight Data Manager (TFDM) Program

- The TFDM concept depends on unprecedented levels of collaboration between ATC and Operators
- TFDM will provide tools for ATC, but only data for Operators
- The ATD-2 IADS system implemented **both** ATC and Operator *pieces of the puzzle*
- ATD-2 transferred Technology and Knowledge to **both** FAA and Industry (operators and vendors)



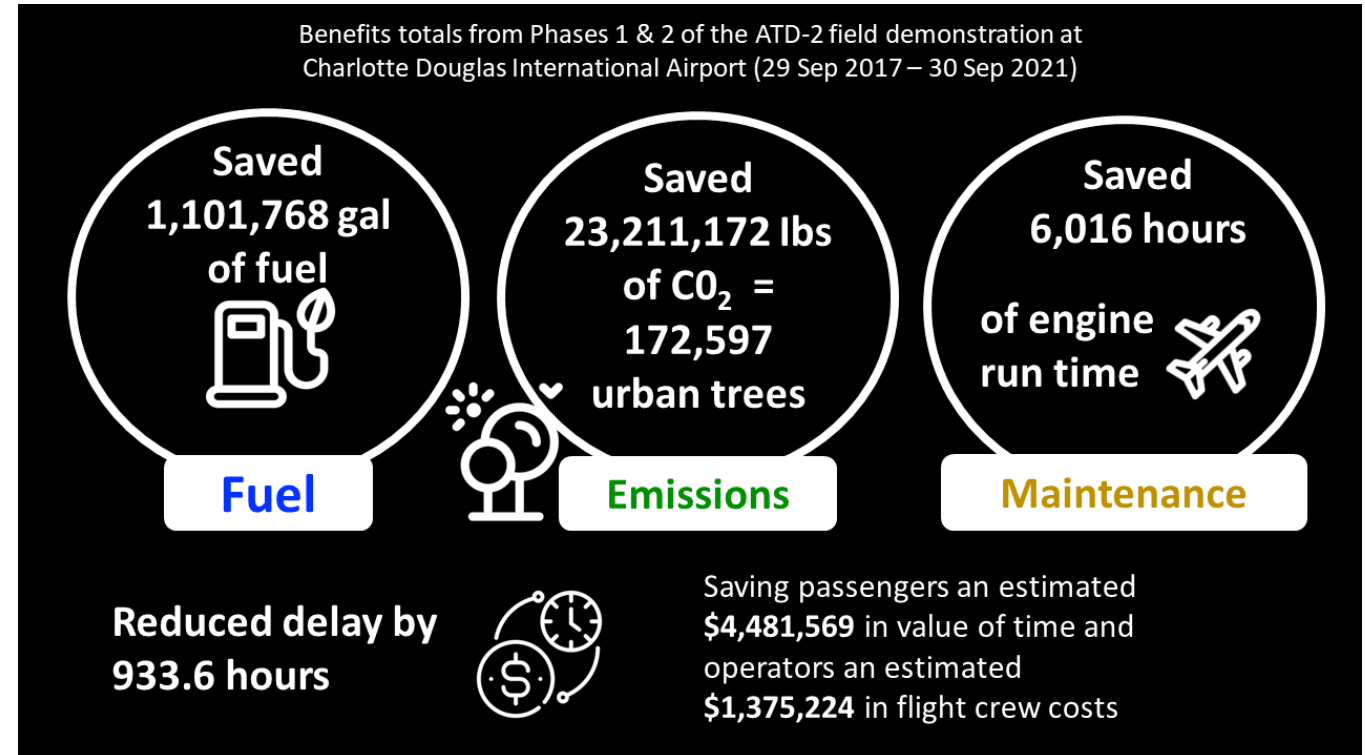
**Benefits (1) and (2a) achieved through tactical gate holds *prior to pushback***  
**49,777 flights**

## 1. Surface metering

- Reduced engine run time
- Reduced fuel consumption and emissions

## 2. Overhead stream insertion

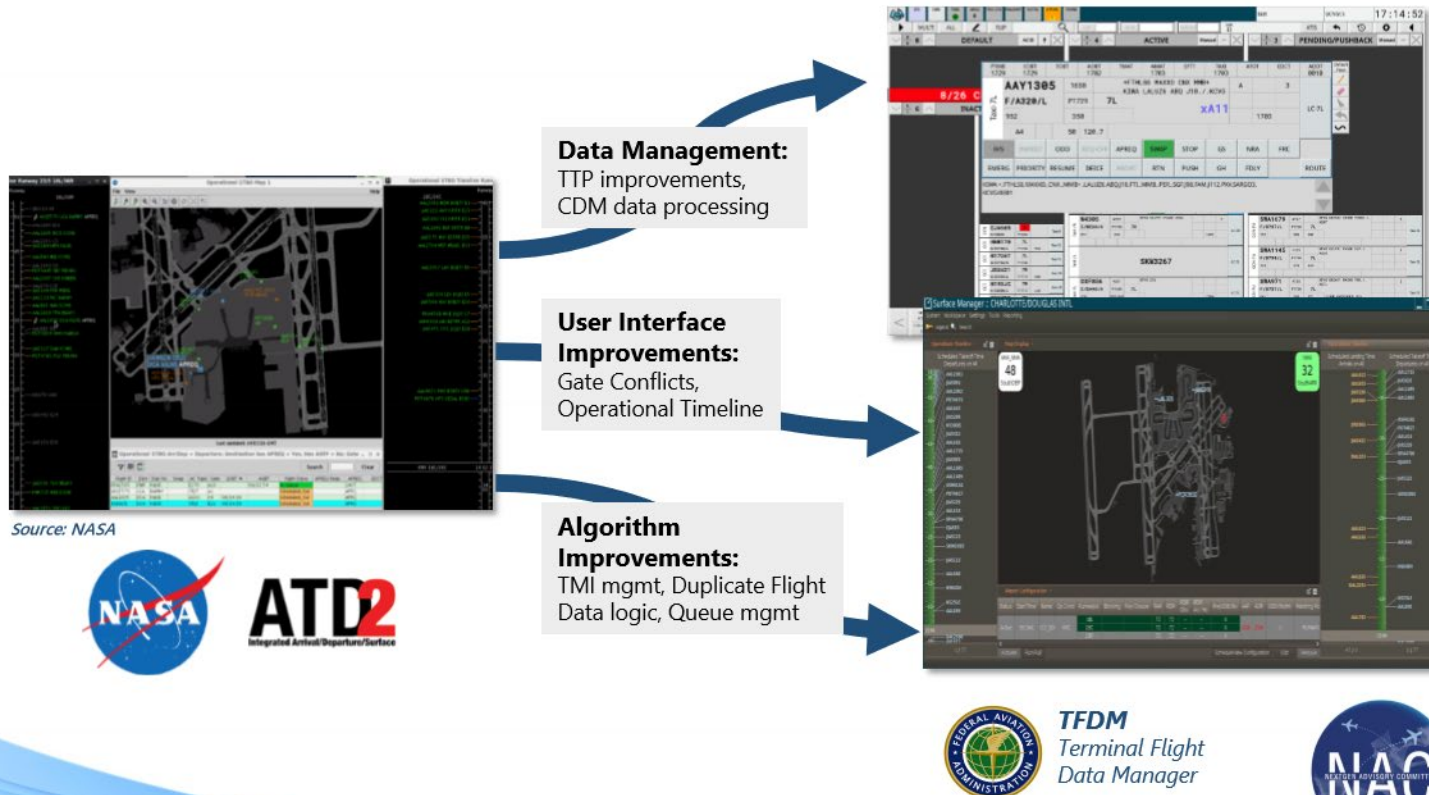
- Pre-scheduling controlled flights at the gate
  - Reduced engine run time
  - Reduced fuel consumption and emissions
- Electronic renegotiation for an earlier slot
  - Reduced total delay
  - Passenger value of time and crew costs
  - Reduced engine run time
  - Reduced fuel consumption and emissions



**Benefit (2b) achieved through electronic renegotiation for an earlier slot for flights with controlled takeoff times *after pushback***  
**7,080 flights**

## Applying Lessons Learned from ATD-2 to TFDM

- ATD-2 was a pathfinder for the FAA – proving out many of TFDM's concepts and providing technical solutions to be incorporated into TFDM



- This slide developed by FAA TFDM program office for communication to key stakeholders
- ATD-2 Field Demo validated TFDM concept and business case
- The slide highlights technology and knowledge transfers from ATD-2 to TFDM
- The FAA's TFDM program will deploy to 89 airports beginning in 2022
- 27 of those airports will have capabilities like those demonstrated by ATD-2